

REMARKS

Claims 1-20 were previously pending in this patent application.

Claims 1-20 stand rejected. Herein, Claims 1, 8, 12, and 17 have been amended. Accordingly, after this Amendment and Response, Claims 1-20 remain pending in this patent application. Further examination and reconsideration in view of the claims, remarks, and arguments set forth below is respectfully requested.

35 U.S.C. Section 112, Second Paragraph Rejections

Claims 1-20 stand rejected under 35 U.S.C. Section 112, Second Paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, it was stated that Independent Claims 1, 8, 12, and 17 include the recitation "without reading from and writing to an intermediate memory buffer" but is not supported by the specification as filed. Herein, although Applicant respectfully disagrees that the recitation "without reading from and writing to an intermediate memory buffer" is not supported by the specification, the recitation has been deleted from Independent Claims 1, 8, 12, and 17. It is respectfully requested that the rejection under 35 U.S.C. Section 112, Second Paragraph, against Claims 1-20 be withdrawn.

35 U.S.C. Section 103(a) Rejections

Claims 1-4, 7-9, 12-13, and 16-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parks et al., U.S. Patent No. 6,598,174 (hereafter Parks) in view of Official Notice. These rejections are respectfully traversed.

Independent Claim 1 recites (as amended):

A method of hot swapping memory, comprising:

- a) providing a spare memory bank in a memory system, wherein said memory system includes a plurality of memory banks such that a memory word is divided into said memory banks;
- b) selecting one of said memory banks to replace;
- c) ***configuring said memory system to perform write operations associated with said selected memory bank*** to both said selected memory bank and said spare memory bank ***before initiating copying*** of said selected memory bank to said spare memory bank;
- d) performing atomic read and write operations to copy content of said selected memory bank to said spare memory bank; and
- e) configuring said memory system to redirect operations to be performed on said selected memory bank to said spare memory bank such that said selected memory bank can be hot replaced. (emphasis added)

It is respectfully asserted that there is no suggestion, motivation, or teaching found in the cited references (Parks and Official Notice) to combine them. Moreover, the combination of the cited references does not teach, suggest, or motivate all the limitations in Independent Claim 1.

Furthermore, Independent Claim 1 recites the limitation, “***configuring said memory system to perform write operations associated with said selected memory bank*** to both said selected memory bank and said spare memory bank ***before initiating copying*** of said selected memory bank to said spare memory bank,” (emphasis added). In contrast, Parks discloses a method/system in which a write request to a storage device being replaced is checked whether it is directed to a memory block already copied to the spare storage device. [Parks; Col. 19, lines 1-18]. If the memory block is already copied to the spare storage device, then the write request is performed to the storage device being replaced and the spare storage device. Id. If the memory block is not already copied to the spare storage device, then the write request is performed to only the storage device being replaced. Id. That is, after initiating copying of the storage device being replaced to the spare storage device, write operations associated with storage device being replaced are performed to both the storage device being replaced and the spare storage device. Otherwise, the write operations associated with storage device being replaced are performed to only the storage device being replaced.

However, Parks fails to disclose configuring the memory system to perform write operations associated with the selected memory bank to both

the selected memory bank and the spare memory bank before initiating copying of the selected memory bank to the spare memory bank, as in the invention of Independent Claim 1. Park teaches away from the invention of Independent Claim 1 by disclosing that write operations associated with the selected storage device are performed to both the selected storage device and the spare storage device if content of the selected storage device is already copied to the spare storage device.

Moreover, it is admitted in the Office Action at page 4 that Parks does not describe the semiconductor storage devices as “memory banks”. Official Notice is taken that the usefulness of providing a semiconductor device unit in the form of a “bank” was well known at the time the invention was made. This Official Notice is respectfully traversed. It was not well known in the art at the time the invention was made the usefulness of providing a semiconductor device unit in the form of a “bank”, as in the invention of Independent Claim 1. Therefore, it is respectfully submitted that Independent Claim 1 is patentable over the combination of Parks and the Official Notice and is in condition for allowance.

Dependent Claims 2-4 and 7 are dependent on allowable Independent Claim 1, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent

Claims 2-4 and 7 are patentable over the combination of Parks and the Official Notice for the reasons discussed above.

With respect to Independent Claim 8, it is respectfully submitted that Independent Claim 8 recites similar limitations as in Independent Claim 1. In particular, Independent Claim 8 is directed to a circuit. The circuit comprises a repeater coupled to a plurality of memory banks such that a memory word is divided into the memory banks and coupled to a spare memory bank. The repeater directs write operations to be performed on a selected memory bank to both the selected memory bank and the spare memory bank before initiating copying of the selected memory bank to the spare memory bank. Therefore, Independent Claim 8 is allowable over the combination of Parks and the Official Notice for reasons discussed in connection with Independent Claim 1.

Dependent Claim 9 is dependent on allowable Independent Claim 8, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent Claim 9 is patentable over Parks and the Official Notice for the reasons discussed above.

With respect to Independent Claim 12, it is respectfully submitted that Independent Claim 12 recites similar limitations as in Independent Claim 1. In particular, Independent Claim 12 recites a memory system comprising a plurality of memory banks such that a memory word is divided into the memory banks; and a spare memory bank. Write operations associated with a selected memory bank are directed to both the selected memory bank and the spare memory bank before initiating copying of the selected memory bank to the spare memory bank. Therefore, Independent Claim 12 is allowable over the combination of Parks and the Official Notice for reasons discussed in connection with Independent Claim 1.

Dependent Claims 13 and 16 are dependent on allowable Independent Claim 12, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent Claims 13 and 16 are patentable over the combination of Parks and the Official Notice for the reasons discussed above.

With respect to Independent Claim 17, it is respectfully submitted that Independent Claim 17 recites similar limitations as in Independent Claim 1. In particular, Independent Claim 17 recites a computer system comprising a memory system including a plurality of memory banks such that a memory

word is divided into the memory banks, a spare memory bank, and a repeater coupled to the memory banks and the spare memory bank. Write operations associated with a selected memory bank are directed to both the selected memory bank and the spare memory bank before initiating copying of the selected memory bank to the spare memory bank. Therefore, Independent Claim 17 is allowable over the combination of Parks and the Official Notice for reasons discussed in connection with Independent Claim 1.

Dependent Claim 18 is dependent on allowable Independent Claim 17, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent Claim 18 is patentable over the combination of Parks and the Official Notice for the reasons discussed above.

Claims 2, 10, 14, and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parks et al., U.S. Patent No. 6,598,174 (hereafter Parks) in view of Official Notice, and further in view of Ohizumi, U.S. Patent No. 5,357,509 (hereafter Ohizumi). These rejections are respectfully traversed.

Dependent Claim 2, Dependent Claim 10, Dependent Claim 14, and Dependent Claim 19 are dependent on allowable Independent Claims 1, 8, 12, and 17 respectively, which are allowable over the combination of Parks and the Official Notice. Moreover, Ohizumi does not disclose that write operations associated with the selected memory bank are performed to both the selected memory bank and the spare memory bank before initiating copying of the selected memory bank to the spare memory bank, as in the inventions of Independent Claims 1, 8, 12, and 17. On the contrary, Ohizumi is directed to generating restored data from data stored in remaining functioning disks, writing the restored data to the spare disk storage, and copying the restored data to a new disk storage, which has replaced the faulty disk. Therefore, Independent Claims 1, 8, 12, and 17 are patentable over the combination of Parks, the Official Notice, and Ohizumi for the reasons discussed above. Hence, it is respectfully submitted that Dependent Claims 2, 10, 14, and 19 are patentable over the combination of Parks, the Official Notice, and Ohizumi for the reasons discussed above.

ALLOWABLE SUBJECT MATTER

Claims 3-6, Claim 11, Claim 15, and Claim 20 would be allowable if rewritten to overcome the rejections under 35 U.S.C. Section 112, Second

Paragraph, and to include all of the limitations of the base claim and any intervening claims.

Claims 3-6, Claim 11, Claim 15, and Claim 20 are dependent on allowable Independent Claims 1, 8, 12, and 17 respectively, which are allowable. Hence, it is respectfully submitted that Dependent Claims 3-6, 11, 15, and 20 are patentable.

CONCLUSION

It is respectfully submitted that the above arguments and remarks overcome all rejections. All remaining claims (Claims 1-20) are neither anticipated nor obvious in view of the cited references. For at least the above-presented reasons, it is respectfully submitted that all remaining claims (Claims 1-20) are in condition for allowance.

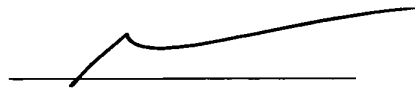
The Examiner is urged to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Respectfully submitted,

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